Space Weather Forecast

Issued on Wednesday, 19 June 2024 at 00:15 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Occasional Moderate class flares likely (R1-R2 radio blackouts).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate with two low level Moderate flares observed, both from the large, complex sunspot just west of the south centre disc. There are six sunspot regions visible. Aside from the region mentioned above, there are also two other moderately sized sunspots just west of the centre disc, however these are smaller and simpler. The three regions to the southwest are even smaller and simper, and now becoming hard to assess due to their location close to the west limb.

No Earth-directed CMEs have been observed, with all CMEs mentioned on previous forecasts missing. However, a filament lift off from the northwest quadrant starting approximately around 18/1600 UTC, is yet to be fully assessed pending updated coronagraph imagery. Early indications appear to show the associated CME directed mainly to the northwest.

Solar Wind / Geomagnetic Activity: Fast solar wind influence from a coronal hole was observed, with solar winds elevated between 550-600 km/s until around 18/1500UTC, a declining trend was then observed falling to a more steady trend around 550km/s. Interplanetary Magnetic Field (IMF) was initially Moderate, but soon eased to weak levels. The important north-south component was mainly moderately northward at first, but soon became weakly variable. Geomagnetic activity has been Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) has remained at background with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is expected with further Moderate class flares likely and a slight chance of isolated Strong class flares. These most likely from the large sunspot region just west of the south-centre disc.

Solar Wind / Geomagnetic Activity: There are no currently Earth-directed CMEs. Ongoing fast wind influence from the recent coronal hole is expected to slowly ease. There is a chance of a further enhancement later on day 3 (21 Jun), from any influence of a further coronal hole, however this is low confidence. Mainly Quiet to Unsettled geomagnetic activity is expected. There is a chance of isolated Active intervals with either of the fast wind enhancements, mainly early day 1 (19 Jun) or later day 3 and into day 4 (21 and 22 Jun).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background but with a slight chance of rising given the occurrence of

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any notable flares. This gives a slight chance of reaching the Minor Solar radiation Storm level (S1).

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	5	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	70	70	70
Very Active	R3 to R5 X	No	15	15	15	15

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	15	15	15
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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